



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,071	07/03/2003	Uwe Schulze	23776US0X	3520
22850	7590	11/28/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			WU, IVES J	
			ART UNIT	PAPER NUMBER
			1713	
DATE MAILED: 11/28/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/612,071		SCHULZE, UWE	
	<b>Examiner</b>		<b>Art Unit</b>	
	Ives Wu		1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

(1). The applicant's Remarks and Amendments filed on September 16, 2005 has been received and fully acknowledged with the following results.

Claims 1,5,7,14 and 19 are amended. Claims 21-41 are newly added.

Accordingly, the rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph for claims 1,5,7,14 and 19 in the prior Office Action dated June 16, 2005 is withdrawn.

The rejection for claims 1-20 based on the prior Office Action dated June 16, 2005 is withdrawn for the improper use of abietic acid as peroxide chain transfer agent cited in the applicant's Remarks filed on September 16, 2005 as well as in the Interview Summary dated August 9, 2005.

However, a new ground of rejection for claims 1-41 is presented as following.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(2). **Claims 29 and 31** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 29 cites: "The polymer latex as claimed in claim 25, wherein the component c) is an ethylenically unsaturated carboxylic acid".

Art Unit: 1713

Because only acrylate monomers are cited in component C) in claim 25, the ethylenically unsaturated carboxylic acid addressed in claim 29 as component C) in claim 25 again would cause indefinite since ethylenically unsaturated carboxylic acid and acrylate monomer are different.

Claim 31 cites: The polymer latex as claimed in claim 25, comprising 1 – 20% by weight of component c) which is nitrile monomer alone or mixture of nitrile monomers.

Because only acrylate monomers are cited in component C) in claim 25, the nitrile monomer addressed in claim 31 as component C) in claim 1 again would cause indefinite since nitrile monomer and acrylate monomer are different.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(3). **Claims 1-3, 5-12, 14-17, 19-27 and 29-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stollmaier et al (US005837762A) in view of Weiler et al (US20020137882A1).

(4). As to component A) of polymer latex composition in **independent claims 1 and 25**, Stollmaier et al (US005837762A) disclose as cited: in one aspect, the present invention is a polymer latex composition, in polymerized form, (A) from 10 wt% - 80 wt% of monovinylidene aromatic monomer(s), Col. 1, line 24-36.

As to component B) of polymer latex composition in **independent claims 1 and 25**, Stollmaier et al (US005837762A) disclose as cited: (B) from 0 wt% - 65 wt% of conjugated diene monomer(s) Col. 1, line 24-36.

As to component C) of polymer latex composition in **independent claims 1 and 25**, Stollmaier et al (US005837762A) disclose as cited: (C) from 0 wt% - 70 wt% of acrylate monomer(s) Col. 1, line 24-36.

As to component D) of polymer latex composition in **independent claims 1 and 25**, Stollmaier et al (US005837762A) disclose as cited: (D) the remaining amount of other polymerizable comonomer(s); with the proviso that the combined weight percentage of components (B) and (C) is greater than zero, Col. 1, line 24-36.

As to chain transfer agent of polymer latex composition to be sulfur-free and halogen-free in the **independent claims 1 and 25**, Stollmaier et al (US005837762A) **do not teach** use of peroxide as chain transfer agent.

Art Unit: 1713

However, Weiler et al teach the use of non-copolymerizable hydroperoxides of the formula R-O-O-H as regulators in the free-radically initiated polymerization of ethylenically unsaturated monomers, where R is H, a C<sub>1</sub> – C<sub>18</sub> alkyl radical or a saturated or unsaturated carbocyclic or heterocyclic ring (Abstract, line 1-6).

The advantage of using non-copolymerizable hydroperoxides of the general formula R-O-O-H as regulators in the free-radically initiated polymerization of ethylenically unsaturated monomers is for the concern from a toxicological point of view. The hydroperoxides regulators do not have odor, sulfur-, halogen- atoms and will not be difficult to remove from the polymer dispersion formed ([0004], [0011]).

Therefore, it would have been obvious at time the invention was made to replace the abietic acid-containing resin with hydroperoxides of Weiler et al in the latex composition of Stollmaier et al in order to obtain the aforementioned advantage.

As to the Tg of the polymer latex to be from -30°C to 70°C in the **independent claims 1 and 25**, in view of the substantially identical polymer latex compositions disclosed by applicant, and by the combined teaching of Stollmaier et al and Weiler et al, it is the examiner's position to believe that the polymer latex composition disclosed by the combined teaching of Stollmaier et al and Weiler et al would inherently possess the Tg to be in the range as specified by the applicant's instant claim 1. Since USPTO does not proper means to conduct the experiments, the burden now is shifted to the applicant to prove otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

As to the limitation of **dependent claims 2 and 3**, Weiler et al disclose hydroperoxides of the general formula R-O-O-H as regulators ([0002]). Particular preference is given to hydrogen peroxide, tert-butyl hydroperoxide, cumene hydroperoxide ([0011], line 1-3).

As to component a) of **dependent claims 5 and 29**, Stollmaier et al (US005837762A) disclose representative monovinylidene aromatic monomers including, for example, styrene, Col. 2, line 18-19.

As to component b) of **dependent claims 5 and 29**, Stollmaier et al (US005837762A) disclose conjugated diene monomers including, for example, 1,3-butadiene, Col. 2, line 28-30.

As to component c) of dependent claims 5 and 29, Stollmaier et al (US005837762A) disclose other polymerizable comonomers including, for example, ethylenically unsaturated carboxylic monomers, Col. 3, line 11-13.

As to the limitation of **dependent claims 6 and 30**, Stollmaier et al (US005837762A) disclose by citing: In one embodiment, the polymer latex composition of the present invention comprises styrene, butadiene, itaconic acid, acrylic acid, Col. 4, line 31-33.

As to the limitation of **dependent claims 7 and 31**, Stollmaier et al (US005837762A) disclose by citing: This nitrile monomer (if used) can be included in amounts up to about 25 parts by weight, preferably 0 – 15 parts by weight, based on 100 total weight parts of monomers, Col. 3, line 44-47.

As to the limitation of **dependent claims 8 and 32**, Stollmaier et al disclose by citing: Such nitrile monomers include, for example, acrylonitrile, Col. 3, line 42-43.

Art Unit: 1713

As to the component styrene in the polymer latex in **dependent claims 9 and 33**, Stollmaier et al disclose representative monovinylidene aromatic monomers including, for example, styrene, Col. 2, line 18-19.

As to the component butadiene in the polymer latex in **dependent claims 9 and 33**, Stollmaier et al disclose conjugated diene monomers including, for example, 1,3-butadiene, Col. 2, line 28-30.

As to the components acrylonitrile, acrylic acid in the polymer latex in **dependent claims 9 and 33**, Stollmaier et al disclose by citing: As aforementioned, other polymerizable comonomers include, for examples, ethylenically unsaturated carboxylic acid monomer, nitrile monomer, Col. 3, line 11-13; Exemplary monocarboxylic acid monomers include, for example, acrylic acid, Col. 3, line 26-27; Such nitrile monomers include, for example, acrylonitrile, Col. 3, line 42-43.

As to the limitation of **dependent claims 10 and 34**, Stollmaier et al disclose by citing: The polymer latex compositions of the present invention further exhibit the advantage of being of less odor than typical latex-based paper coating compositions, Abstract, line 10-13.

As to the limitation of **dependent claims 11, 12, 26, 27 and 35**, Weiler et al disclose hydroperoxides of the general formula R-O-O-H as regulators ([0002]). Particular preference is given to hydrogen peroxide, tert-butyl hydroperoxide, cumene hydroperoxide ([0011], line 1-3).

(5). As to the polymer latex compositions and its  $T_g$  in **independent claims 14 and 37**, the disclosure of Stollmaier et al and Weiler et al is incorporated herein by reference. The most



Art Unit: 1713

subject matters of polymer latex components, compositions, chain transfer agent and Tg has been recited in the applicant's claim 1 and has been discussed in paragraph (4).

As to the process for preparation of a polymer latex by reacting in **independent claims 14 and 37**, Stollmaier et al disclose by citing: In general, the polymer latex composition of the present invention can be prepared by polymerization processes which are known in the art, and particularly by the known latex emulsion polymerization process, Col. 4, line 41-44.

As to the limitation of **dependent claims 15 and 38**, Stollmaier et al disclose by citing: Crosslinkers and the well-known latex polymerization aids such as initiators, surfactants and emulsifiers can be used as needed, Col. 4, line 54-56; a polymerization temperature between 80°C – 90°C, Example 1, Col. 6, line 34.

As to the limitation of **dependent claims 16, 17 and 39**, Weiler et al disclose hydroperoxides of the general formula R-O-O-H as regulators ([0002]). Particular preference is given to hydrogen peroxide, tert-butyl hydroperoxide, cumene hydroperoxide ([0011], line 1-3).

As to the limitation of **dependent claim 19**, Stollmaier et al disclose representative monovinylidene aromatic monomers including, for example, styrene, Col. 2, line 18-19.

As to component b) of **dependent claim 19**, Stollmaier et al disclose conjugated diene monomers including, for example, 1,3-butadiene, Col. 2, line 28-30.

As to component c) of **dependent claim 19**, Stollmaier et al disclose other polymerizable comonomers including, for example, ethylenically unsaturated carboxylic monomers, Col. 3, line 11-13.

As to the limitation of **dependent claim 20**, Weiler et al disclose, in general, the amount of hydroperoxide is from 0.01 to 15 wt% based on the total weight of monomers ([0012], line 5-9).

As to the peroxide not acting as an initiator in the **dependent claims 21, 23 and 40**, Weiler disclose the tert-butyl hydroperoxide regulation in Example 4 ([0040]).

As to the peroxide exhibiting no thermal decomposition in the **dependent claims 22, 24, 36 and 41**, illustrated in Example 4 of Weiler et al, the highest polymerization temperature is 90 °C and the highest polymerization temperature is between 80 - 90 °C in the example 1 of Stollmaier et al. The peroxides may not undergo thermal decomposition if used as chain transfer agent or initiator, as evidenced by George Odian, there is no half-life observation for t-butyl peroxide, t-butyl hydroperoxide and cumyl peroxide below 100° C (Table 3-2, page 212, Principles of Polymerization). Hence, the physical property of no thermal decomposition exhibited by peroxides is inherently possessed for the temperature below 100° C. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

(6). **Claims 4, 13, 18 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stollmaier et al (US005837762A) in view of Weiler et al (US20020137882A1), and further in view of Charleux et al (US006353065B1).

As to limitation of **dependent claim 4, 13, 18 and 28**, Both Stollmaier et al and Weiler et al do not teach using the organic peroxides for chain transfer agent such as di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

Art Unit: 1713

However, Charleux et al teach by citing: Such an initiator can be organic peroxide or hydroperoxide and can, for example, be chosen from the following list: di-tert-butyl peroxide, tert-butyl peroxybenzoate, etc, Col. 6, line 35-50.

It is indicated in Charleux et al teaching for the interchangeability of organic peroxide and hydroperoxide as functionally equivalent in a similar polymerization process such as initiators. However, Weiler et al disclose that the non-copolymerizable hydroperoxides used as regulators in conjunction with an initiator system ([0012], line 1-2). Similarly, organic peroxide and hydroperoxide would be functional equivalent chain transfer agent as well.

Thus, it would have been obvious at the time of applicant's invention to replace the Stollmaier et al's chain transfer agent – abietic acid with Charleux et al's organic peroxide selected from group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate, etc, based on their expected interchangeability as functionally equivalent initiator, chain transfer agent, motivated by reasonable expectation of success. *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

### ***Response to Arguments***

Applicant's arguments, see page 17, line 8 to page 18, line 23 in the applicant's Amendments, filed on September 16, 2005, with respect to the rejection(s) of claim(s) 1 and dependent claims 2-20 under 35 U.S.C. code 102(b), 103(a) based on Stollmaier et al (US005837762A), Weiler et al (US20020137882A1) and Charleux et al (US006353065B1) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made also in view of

Art Unit: 1713

Stollmaier et al (US005837762A) and Weiler et al (US20020137882A1) Charleux et al (US006353065B1). Therefore, claims 1-41 are pending presently.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu  
Art Unit: 1713

Date: November 15, 2005



DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700